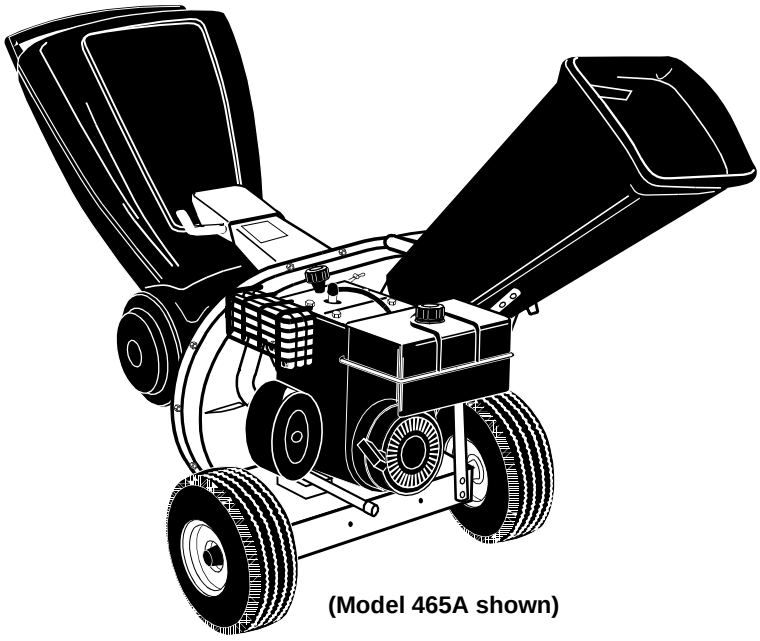
YARD MACHINES by MTD

OPERATOR'S MANUAL

Chipper - Shredders
Model Series
462 thru 465



(Model 465A shown)

MTD For A Growing World.™

IMPORTANT: READ SAFETY RULES AND INSTRUCTIONS CAREFULLY

Warning: This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 368022 Cleveland, Ohio 44136-9722.

MTD PRODUCTS INC. P.O. BOX 368022 CLEVELAND, OHIO 44136-9722

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SECTION 1: FINDING YOUR MODEL NUMBER

This Operator's Manual is an important part of your new chipper-shredder. It will help you assemble, prepare and maintain your chipper-shredder. Please read and understand what it says.

Before you prepare your chipper-shredder for its first use, please locate the model plate and copy the information from it in this Operator's Manual. The information on the model plate is very important if you need help from your dealer or the MTD Customer Support Department.

- Every chipper shredder has a model plate. You can locate it by standing behind the unit in the operating position and looking down at the frame next to the engine. See Figure 1.

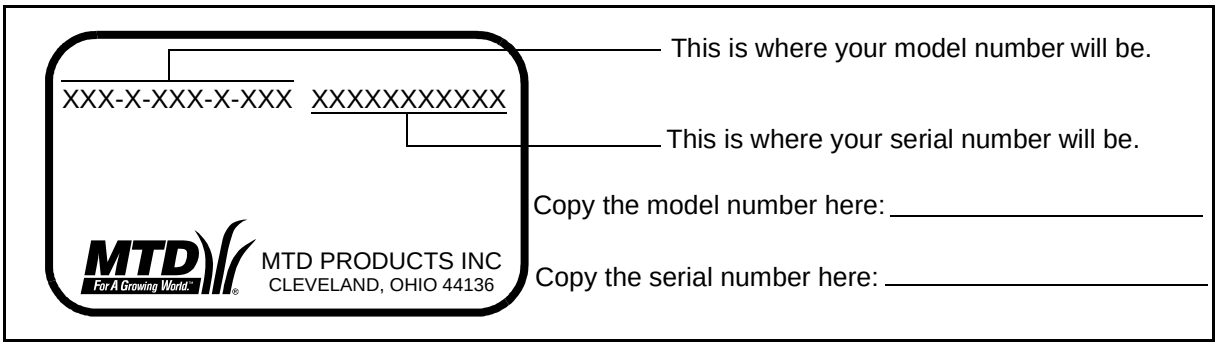


Figure 1

SECTION 2: CALLING CUSTOMER SUPPORT

- **LOCATE YOUR MODEL NUMBER AND SERIAL NUMBER —** Record this information in the space provided. To find your unit's specific model number and serial number, see SECTION 1: FINDING YOUR MODEL NUMBER.
- If you are having difficulty assembling this product or if you have any questions regarding the controls, operation or maintenance of this unit, please call the Customer Support Department.
- Customer Support can be reached by dialing: **1- (330) 220-4MTD (4683)**
  or
  1- (800)-800-7310
- Please have your model number and serial number ready when you call.
- Although both numbers are important, you will be asked to enter only your ***serial*** number before your call can be processed.

SECTION 3: IMPORTANT SAFE OPERATION PRACTICES

WARNING: THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR CHIPPER-SHREDDER. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL: HEED ITS WARNING.

WARNING: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

DANGER: Your chipper-shredder was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This chipper-shredder is capable of amputating fingers and hands and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

1. GENERAL OPERATION

- Read this operator's manual carefully in its entirety before attempting to assemble this machine. Read, understand, and follow all instructions on the machine and in the manual(s) before operation. Be completely familiar with the controls and the proper use of the machine before operating it. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
- Your chipper-shredder is a powerful tool, not a plaything. Therefore, exercise extreme caution at all times. Your unit has been designed to perform two jobs; to chip and shred vegetation found in a normal yard. Do not use it for any other purpose.
- Never allow children under age 16 to operate the unit. Children 16 years and older should only operate the unit under close parental supervision. Only responsible individuals who are familiar with these rules of safe operation should be allowed to use your unit.
- Keep the area of operation clear of all persons, particularly small children and pets. Stop the engine when they are in the vicinity of the unit. Keep work area clean and clear of branches or obstacles which could cause you to stumble or fall.
- When feeding material into this equipment, be extremely careful that pieces of metal, rocks, bottles, cans or other foreign objects are not included. Personal injury or damage to the machine could result.
- Wear sturdy, rough-soled work shoes and close fitting slacks and shirt. Shirt and slacks that cover the arms and legs and steel-toed shoes are recommended. Do not wear loose fitting clothes or jewelry and secure hair so it is above shoulder length. They can be caught in moving parts. Never operate a unit in bare feet, sandals or sneakers. Wear gloves when feeding material in the chipper chute or shredder hopper.
- Always wear safety glasses or safety goggles, during operation and while performing an adjustment or repair, to protect eyes from foreign objects that may be thrown from the machine.
- Never place your hands, feet, or any part of your body into the shredder hopper, chipper chute, discharge opening, or near any moving part while the engine is running. Keep clear of the discharge opening at all times. If it becomes necessary to push material into the chipper chute or shredder hopper, use a small diameter stick, NOT YOUR HANDS.
- If it is necessary for any reason to unclog the feed intake or discharge openings or to inspect or repair any part of the machine where a moving part can come in contact with your body or clothing, stop the machine, allow it to cool, disconnect the spark plug wire from the spark plug and move it away from the spark plug before attempting to unclog, inspect or repair.
- Do not operate unit while under the influence of alcohol or drugs.
- The machine should only be operated on a level surface. Never operate your unit on a slippery, wet, muddy or icy surface. Keep your work area clean and clear of branches or obstacles which could cause you to stumble and fall. Do not overreach. Maintaining proper footing and balance is essential to preventing accidents.
- Do not allow an accumulation of processed material to build up in the discharge area as this will prevent proper discharge and can result in kickback from the chipper chute.
- Keep your face and body back from chipper chute to avoid accidental bounce back of any material.
- Do not transport machine while engine is running.
- If the cutting mechanism strikes a foreign object or if your machine should start making an unusual noise or vibration, immediately stop the engine and allow the machine to come to a complete stop. Disconnect the spark plug wire and move it away from the spark plug. Take the following steps.

- Inspect for damage.
- Repair or replace any damaged parts.
- Check for any loose parts and tighten to assure continued safe operation.

- Never attempt to attach or remove catcher bag when engine is running. Shut the engine off and wait for the impeller to come to a complete stop. The impeller continues to rotate for a few seconds after the engine is shut off. Never place any part of the body in the impeller area until you are sure the impeller has stopped rotating.
- Muffler and engine become hot and can cause a burn. Do not touch.
- Do not allow leaves or other debris to build up on engine's muffler. The debris could ignite and cause a fire.
- Do not attempt to shred or chip material larger than specified in this manual. Personal injury or damage to the machine could result.
- Do not operate engine if air cleaner or cover over carburetor air intake is removed, except for adjustment. Removal of such parts could create a fire hazard.
- Only use accessories approved for this machine by the manufacturer. Read, understand, and follow all instructions provided with the approved accessory.
- If situations occur which are not covered by this manual, use care and good judgment. Contact your dealer for assistance.
- Keep discharge chute deflector, chipper chute door, and all other guards and safety devices in place and operating properly.
- Only operate unit in good daylight. Do not operate unit at night or in dark areas where your vision may be impaired.

2. CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of small children. Children are often attracted to the chipper-shredder and the chipping and shredding activity. Never assume that children will remain where you last saw them.

- Keep children out of the work area and under the watchful eye of a responsible adult other than the operator.
- Be alert and turn the unit off if a child enters the area.
- Never allow children under the age of 16 to operate the chipper-shredder.

3. SERVICE

- Use extreme care in handling gasoline and other fuels. They are extremely flammable and the vapors are explosive.
- Store fuel and oil in approved containers, away from heat and open flame, and out of the reach of children. Check and add fuel before starting the engine. Never remove gas cap or add fuel while the engine is running. Allow engine to cool at least two minutes before refueling.
- Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Never refuel unit indoors because flammable vapors will accumulate in the area.
- Never store the machine or fuel container inside where there is an open flame or spark such as a gas hot water heater, space heater, clothes dryer or furnace.
- Never run your machine in an enclosed area as the exhaust from the engine contains carbon monoxide, which is an odorless, tasteless and deadly poisonous gas.
- To reduce fire hazard, keep engine and muffler free of leaves, grass, and other debris build-up. Clean up fuel and oil spillage. Allow unit to cool at least 5 minutes before storing.
- Before cleaning, repairing, or inspecting, make certain the impeller and all moving parts have stopped. Disconnect the spark plug wire and keep wire away from spark plug to prevent accidental starting. Do not use flammable solutions to clean air filter.
- Check the blade and engine mounting screws at frequent intervals for proper tightness. Also visually inspect blades for wear and/or damage (e.g., bent, cracked). Replace with blades which meet original equipment specifications.
- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Never tamper with safety devices. Check their proper operation regularly.
- After striking a foreign object, immediately stop the engine, disconnect the spark plug wire from the spark plug, and thoroughly inspect the unit for any damage. Repair damage before starting and operating unit.
- Do not alter or tamper with the engine's governor setting. The governor controls the maximum safe operating speed of the engine. Overspeeding the engine is dangerous and will cause damage to the engine and to other moving parts of the machine.

WARNING - YOUR RESPONSIBILITY: Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.

DANGER
TO AVOID SERIOUS INJURY:
• DO NOT DEPOSIT BRANCHES LARGER THAN 1/2 INCH DIAMETER INTO THIS HOPPER.
• WEAR APPROVED SAFETY GLASSES, GLOVES AND EAR PROTECTION.
AVOID LOOSE FITTING CLOTHING.
• Read the Owner's Manual before starting and using this chipper/shredder.
• Keep hands, feet, face and clothing out of shredder hopper inlet and chipper chute inlet.
• Keep hands, feet, face and clothing away from discharge area and moving parts.
• Keep hands and feet out of discharge opening when chipper/shredder is running. The rotating cutting blades inside opening will cause serious personal injury.
• Do not transport unit with engine running.
• Keep bystanders, children, and pets away from operating and discharge
• If chipper/shredder jams or becomes clogged, shut engine off right away and wait for all moving parts to come to a complete stop. Disconnect the spark plug wire and prevent it from touching the spark plug. Use only a long wooden stick (or long-handled shovel) to clear away discharged materials or blockages.
• Keep all shields and guards in place and securely attached.
• DO NOT use hands or feet to clear material from the discharge area or discharge opening.
• DO NOT install parts, or remove, adjust, or service the discharge screen or any other part while the chipper/shredder is running. DO NOT operate the chipper/shredder on uneven ground,or on a paved, gravel, or hard surface. DO NOT run engine in an enclosed area-exhaust gas contains poisonous carbon monoxide fumes.
WARNING
TO AVOID A FIRE HAZARD, KEEP LEAVES, GRASS, AND OTHER COMBUSTIBLE MATERIALS AWAY FROM HOT ENGINE AND MUFFLER.
DANGER
ASSEMBLE CHUTE DEFLECTOR TO THIS UNIT BEFORE OPERATING MACHINE.
SAFETY GLASSES SHOULD BE WORN
DON'T DEPOSIT MATERIAL LARGER THAN 1/2 INCH DIAMETER IN THE HOPPER THIS MAY CAUSE DAMAGE TO SHREDDING MACHINE.
WARNING: DO NOT OPERATE THIS MACHINE UNLESS THE CHUTE DEFLECTOR HAS BEEN PROPERLY INSTALLED AND IS SECURED WITH THE HAND KNOBS.
DANGER
ROTATING CUTTING BLADES. KEEP HANDS AND FEET OUT OF OPENING WHILE MACHINE IS RUNNING.
DANGER
ROTATING CUTTING BLADES. KEEP HANDS AND FEET OUT OF OPENINGS WHILE MACHINE IS RUNNING.

Figure 2 Safety labels found on your unit

SECTION 4: SET-UP INSTRUCTIONS

IMPORTANT: After assembly, service engine with gasoline, and check oil level as instructed in the separate engine manual packed with your unit.

NOTE: All references to right or left side of the snow thrower are determined from behind the unit in the operating position.

UNPACKING

1. Remove staples, break glue on the top flaps, or cut tape at carton end and peel along top flap to open carton.
2. Remove any loose parts included with unit (i.e., operator's manual, etc.)
3. Cut corners and lay end of carton down flat.
4. Remove packing material.
5. Roll unit out of carton. Check carton thoroughly for loose parts.

TOOLS REQUIRED FOR ASSEMBLY

- Two Adjustable Wrenches

LOOSE PARTS IN CARTON

A	Hopper Assembly
B	Discharge Chute
C	Chipper Chute (463 or 465)
D	Bag

ATTACHING THE HOPPER ASSEMBLY AND DISCHARGE CHUTE

All Models

1. **Pull** the spark plug wire off of the spark plug. See Figure 3.

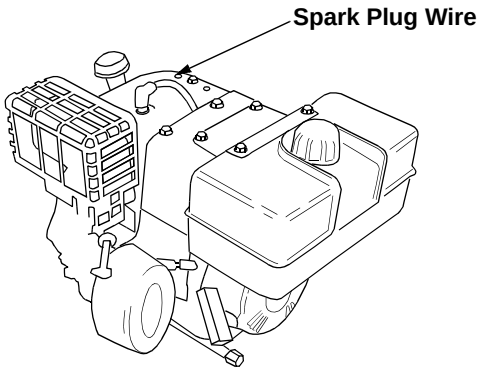


Figure 3

2. Remove six hex nuts (A) and six washers (B) from the weld studs on the flail housing. Leave the support plate in place on the weld studs. See Figure 4.

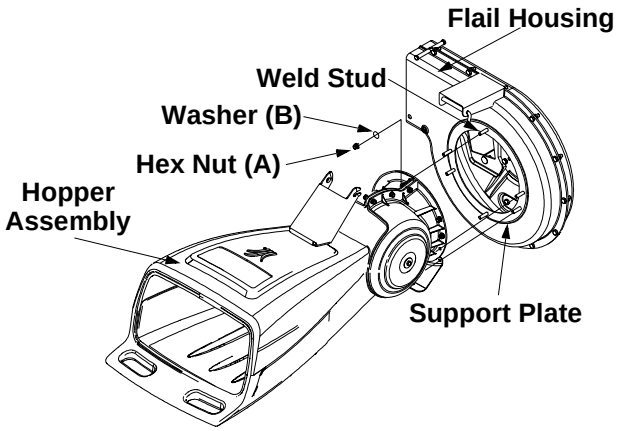
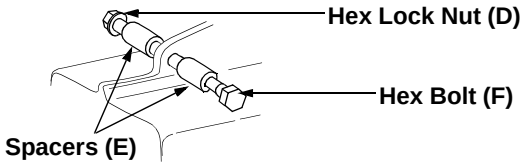


Figure 4

3. Place hopper assembly into position in front of flail housing. Align holes in hopper assembly collar with weld studs on flail housing.
4. Slide hopper assembly onto weld studs.
5. Replace the washers (B) and the hex nuts (A).
6. Tighten the hex nuts (A).
7. Lift hopper until it clicks into the raised position.
8. Remove wing knobs (C) from each side of the discharge chute opening on the chipper shredder. See Figure 5.



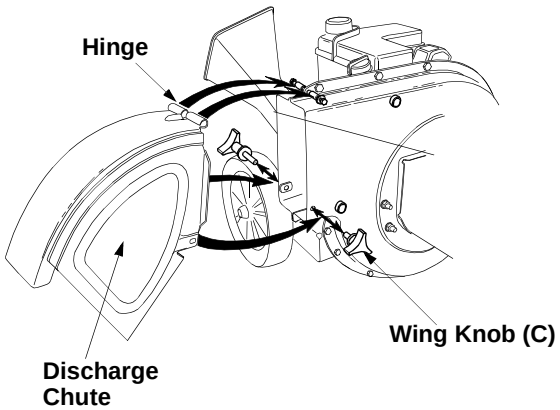


Figure 5

9. Use wrenches to remove hex lock nut (D). Remove two spacers (E), and hex bolt (F) from top of the housing assembly. For easy assembly, do not remove the second spacer from the hex bolt. See Figure 5.
10. Place the discharge chute in position on the discharge opening. Insert hex bolt (F) and spacer (E) through hinge on discharge chute and housing (spacer fits inside of hinge).
11. Place second spacer (E) over hex bolt (F) inside the other half of the hinge. Secure with hex lock nut (D). Tighten securely.
12. Secure both sides of discharge chute to flail housing using wing knobs (C). Tighten wing knobs.

ATTACHING THE CHIPPER CHUTE (Model 463 or 465 chipper shredders)

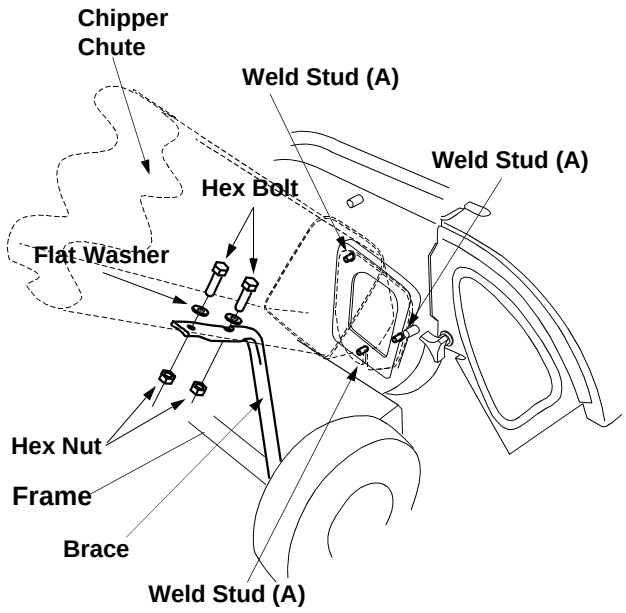


Figure 6

1. Remove the three cupped washers and hex nuts from the weld studs (A) beside the opening on the left side of the housing. See Figure 6.
2. Remove the two hex bolts, lock nuts, and flat washers from the two holes on the upper end of the brace.
3. Place the chipper chute over the weld studs so the slot on the chute is towards the bottom. Align the three holes on the chute with the three weld studs.
4. Replace the three cupped washers (cupped side against the chipper chute) and hex nuts that you removed in step 1. Do not tighten the nuts at this time. Make sure to place the cupped side of the washer against the chipper chute.
5. Your unit is shipped with one end of the brace already secured to the lower frame. Loosen the bolts securing the brace to the frame.
6. Align the holes on the chute with the holes on the brace.
7. Attach brace to chipper chute with the hardware removed earlier from the brace. Tighten securely. See Figure 6.
8. Tighten the bolts securing the brace to the frame.
9. Tighten the three nuts on the weld studs holding the chipper chute to the flail housing.

ATTACHING THE BAG

All Models

1. To attach the bag, place the opening of the bag over the chute deflector so it completely covers the chute deflector. See Figure 7.
2. Depress the plunger on the drawstring, and pull on the drawstring until the bag is tight around the chute opening. Release plunger to lock it into position. See Figure 7.

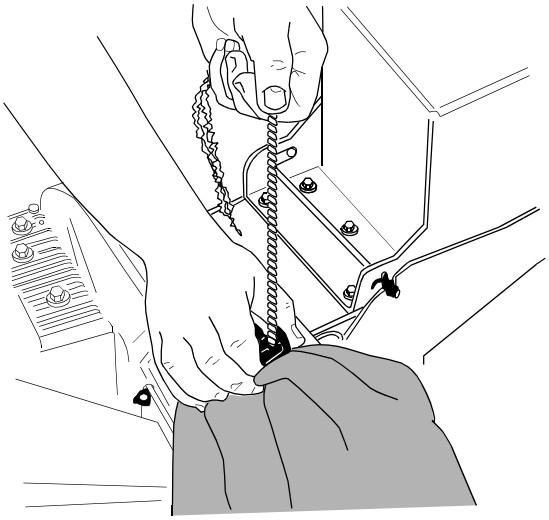


Figure 7

SECTION 5: CONTROLS

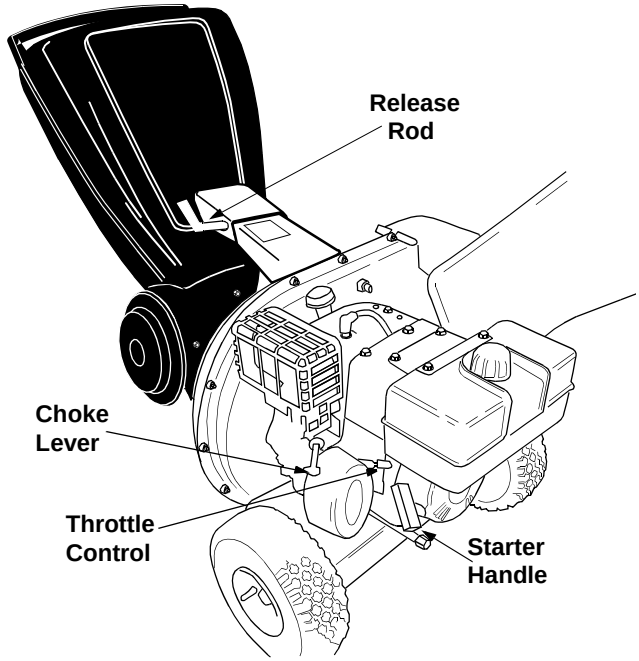


Figure 8

Release Rod: Used to release the hopper when raising or lowering. See Figure 8.

Choke Lever: Used to enrich the fuel mixture in the carburetor when starting a cold engine.

Starter Handle: Used to manually start the engine.

Hopper Assembly: Allows leaves and small branches up to 1/2" diameter to be fed into the impeller for chipping and shredding. Lower the hopper to collect raked material for shredding.

Throttle Control: Regulates speed of the engine.

Chipper Chute: Allows bulky vegetation like stalks or heavy branches to be fed into the impeller for chipping and shredding. Maximum diameter is 3" on model 463 or 465 and 2" on model 462.

Catcher Bag (not shown): Used to collect the shredded material.

SECTION 6: OPERATION

STOPPING ENGINE

Move throttle control lever to STOP position. Disconnect spark plug wire and move away from spark plug to prevent accidental starting.

WARNING: Before using your chipper-shredder, again refer to the **safety practices** of this manual. **Always be careful.**

GASOLINE AND OIL FILL-UP

See engine manual included with your unit

- If the unit runs out of gas as it is shredding or chipping, it may be necessary to unclog the unit before it can be restarted. Refer to Removing the Flail Screen in Maintenance section.

WARNING: Always stop the engine and **disconnect** the spark plug wire before performing any maintenance or adjustments.

STARTING ENGINE

WARNING: Be sure **no one other than the operator** is standing near the chipper-shredder while starting or operating. **Do not operate** this chipper-shredder unless the chute deflector has been properly installed and is secured with the hand knobs.

NOTE: To prevent the unit from sliding, place your foot firmly against the wheel.

1. Attach spark plug wire and rubber boot to spark plug.
2. Move choke lever to CHOKE position (if equipped).
3. If restarting a warm engine **after a short shutdown**, move choke lever to No Choke position.
4. Grasp starter handle and pull rope out slowly until engine reaches start of compression cycle (rope will pull slightly harder at this point). Let the rope rewind slowly.

5. Pull rope with a rapid full arm stroke. Let rope return to starter slowly.
6. When engine starts, move choke lever to half choke position until engine runs smoothly and then to No Choke position.
7. If engine **fails to start** after three pulls, move choke lever to No Choke position and pull starter rope again.
8. If engine fires, but **does not continue to run**, move choke lever to Full Choke position and pull rope again.
9. Move choke lever to OFF position as engine warms up.

NOTE : A noise will be heard when finding the start of the compression cycle. This noise is caused by the flails and fingers which are part of the shredding mechanism falling into place, and should be expected. In addition, the flails and fingers will be noisy after the engine is started, until the impeller reaches full speed.

USING YOUR CHIPPER-SHREDDER

WARNING: Do not attempt to shred or chip any material other than vegetation found in a normal yard (i.e., branches, leaves, twigs, etc.).

- Leaves and small branches up to 1/2" diameter (maximum) can be fed into the hopper assembly when it is in the raised or lowered position.
- For model 462, bulky material, such as stalks or heavy branches, up to 2” in diameter should be fed into the chipper chute.
- For model 463 or 465, bulky material, such as stalks or heavy branches, up to 3” in diameter should be fed into the chipper chute.

WARNING: Do not put material larger than is specified into the hopper, and/or into the chipper chute. Personal injury or damage to the machine could result.

- If it becomes necessary to push material into the chipper-shredder, use a small diameter stick -- **NOT YOUR HANDS**. The stick should be small enough that it will be ground up if it gets into the impeller assembly.

LOWERING THE HOPPER ASSEMBLY

1. To lower the hopper assembly, use one hand to grasp the hand-hold at the top of the hopper assembly and lift slightly.
2. Pull out on the release rod, and lower the hopper assembly to the ground.

NOTE: For best performance, it is important to keep the shredding blade and the chipper blades sharp. If the composition of the material being discharged changes (becomes stringy, etc.) or if the rate at which the material is discharged slows down considerably, it is likely that the shredding blade and/or chipper blades are dull and need to be sharpened or replaced. Refer to Maintenance section.

IMPORTANT: There is a flail screen located inside the housing in the discharge area. If the flail screen becomes clogged, remove and clean as instructed in the Maintenance section.

WARNING: The chipper-shredder discharges materials with considerable velocity. **Keep away** from the area around the discharge chute. Always **stop the engine** and disconnect spark plug wire when removing or attaching the bag, changing containers, or removing the shredded material. Wear safety glasses and gloves whenever using your chipper-shredder.

SECTION 7: MAINTENANCE

GENERAL RECOMMENDATIONS

- Always observe safety rules when performing any maintenance.
- The warranty on this chipper shredder does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, operator must maintain the chipper shredder as instructed in this manual.
- Periodically check all fasteners and make sure these are tight.

WARNING: Always stop the engine and **disconnect** the spark plug wire before performing any maintenance or adjustments. **Never remove discharge chute** until the engine has completely stopped.

WARNING: Temperature of muffler and nearby areas **may exceed 150^{o} F(65^{o}C)**. Avoid these areas.

LUBRICATION

Lubricate the pivot points on the release rod bracket, hopper assembly, and chute deflector once a season using a light oil.

CLEANING

- Clean engine periodically. Remove dirt and debris with a cloth or brush.
- Frequently remove leaves, dirt and debris from cooling fins, air intake screen and levers and linkage. This will help ensure adequate cooling and correct engine speed.
- Clean the chipper shredder by running water from a hose through the hopper assembly and chipper chute with the engine running. Allow the chipper-shredder to dry thoroughly.

NOTE: Cleaning with a forceful spray of water is not recommended as water could contaminate the fuel system.

- Wash the bag periodically with water. Allow to dry thoroughly in the shade. Do not use heat.

ENGINE OIL

The engine oil is the most important "insurance policy" your new chipper shredder has. It protects it from excess wear and tear and helps the cooling process. It is important that you maintain the engine oil at the proper level and that it is changed on a regular basis.

- Service the engine oil according to the separate engine owner's guide supplied with your chipper shredder.

To Drain Oil

Drain oil while engine is warm. Follow the instructions given below.

- Remove oil drain plug or cap. The plug or cap is located in front of the engine or under the frame. Catch oil in a suitable container.
- When engine is drained of all oil, replace drain plug or cap securely.
- Refill with fresh oil.
- Replace dipstick.

AIR CLEANER

The air cleaner prevents damaging dirt, dust, etc., from entering the carburetor and being forced into the engine and is important to engine life and performance. **Never run** the engine without air cleaner completely assembled.

- Service the air cleaner according to the separate engine owner's guide supplied with your chipper shredder.

CARBURETOR

WARNING: If any adjustments are made to the engine while the engine is running (e.g. carburetor), **keep clear of all moving parts.** Be careful of **heated surfaces** and muffler.

- Service the carburetor according to the separate engine owner's guide supplied with your chipper shredder.

ENGINE SPEED

- The engine speed on your chipper-shredder has been set at the factory. Do not attempt to increase engine speed or it may result in personal injury. If you believe the engine is running too fast or too slow, take your chipper-shredder to the nearest service center for repair and adjustment.

SPARK PLUG

- Service the spark plug according to the separate engine owner's guide supplied with your chipper shredder.

REMOVING THE FLAIL SCREEN

If the discharge area becomes clogged, remove the flail screen and clean area as follows: See Figure 9.

1. Stop engine, make certain the chipper-shredder has come to a complete stop and disconnect spark plug wire from the spark plug before unclogging the chute.
2. Remove the two hand knobs on each side of the discharge chute (also called the chute deflector).
3. Lift the discharge chute up, and keep it out of the way.
4. Remove two hairpin clips from the clevis pins which extend through the housing. Remove the clevis pins.
5. Pull the flail screen from inside the housing.
6. Clean the screen by scraping or washing with water.

7. Reinstall the screen.
8. Put the discharge chute back to its original position and tighten the hand knobs.

NOTE: Be certain to reassemble the flail screen with the curved side down.

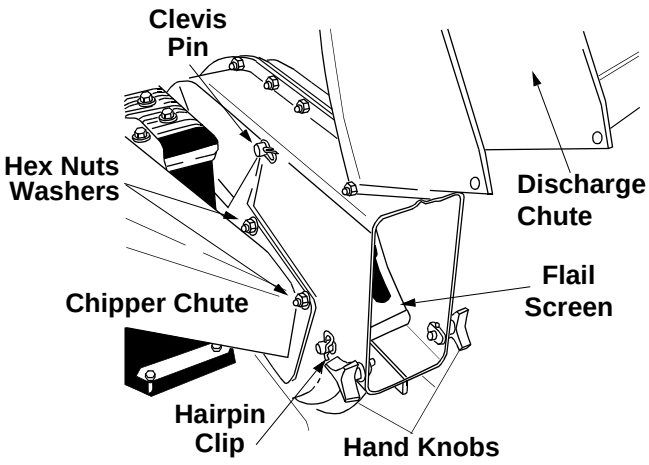


Figure 9

SHARPENING OR REPLACING THE CHIPPER BLADES

All models

1. Disconnect spark plug wire and move it away from spark plug.
2. Remove the flail screen as instructed in previous section.
3. Using a wrench, remove the chipper chute by removing three hex nuts and washers.

Model 463 or 465

4. Use an adjustable wrench, to remove the brace holding the chipper chute to the frame by removing the hex bolts.

All models

5. Rotate the impeller assembly by hand until you locate one of the two chipper blades in the chipper chute opening. Remove the blade, using a 3/16" allen wrench on the outside of the blade and an adjustable wrench on the impeller assembly (inside the housing). See Figure 10.

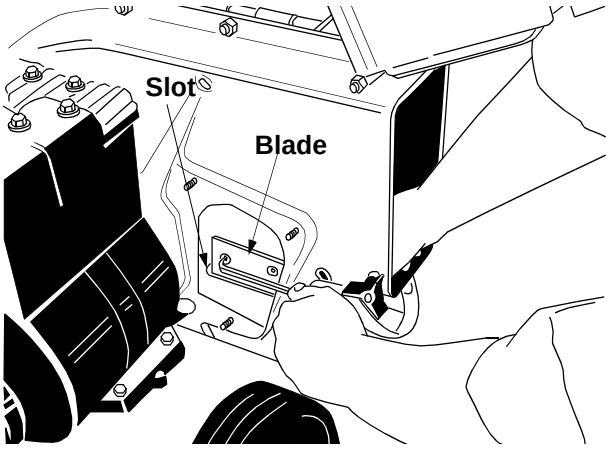


Figure 10

6. Remove the other blade in the same manner.
7. Replace or sharpen blades.
8. If sharpening, make certain to remove an equal amount from each blade.
9. Reassemble in reverse order. Make certain blades are reassembled with the sharp edge facing the direction shown in Figure 10 (sharp edge is assembled toward the slotted opening at the bottom).
10. Torque bolts and nuts to 250-350 inch-pounds.

SHARPENING OR REPLACING THE SHREDDER BLADE

The shredder blade may be removed for sharpening or replacement as follows. See Figure 11.

1. Disconnect spark plug wire and move it away from spark plug.
2. Lower the hopper assembly. Block up the housing.

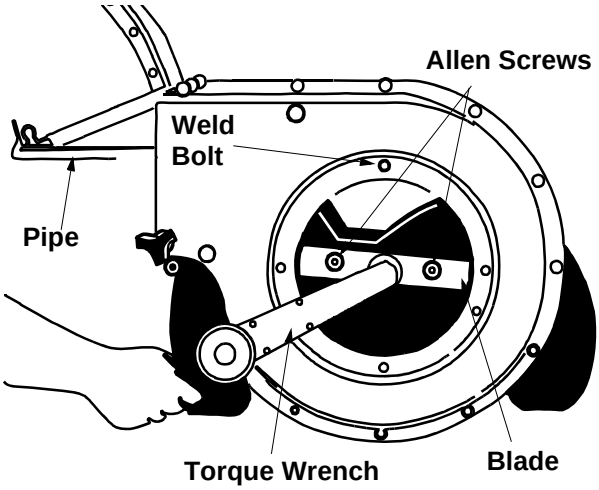


Figure 11

3. Remove the six hex lock nuts and flat washers from the housing weld bolts using a 1/2" wrench. Separate the chipper-shredder into two halves.
4. Remove the support plate.

NOTE: When reassembling, make certain the embossed tab faces inward towards the impeller.

5. Remove the two hand knobs and cupped washers which secure the discharge chute. Raise the discharge chute.
6. Insert a 1/2" or 3/4" diameter pipe through the flail screen into the impeller to keep it from turning, or remove the flail screen and insert a piece of wood (2 x 4) into the chute opening.
7. Remove the two outside screws on the blade, using a 3/16" allen wrench and a 1/2" wrench.
8. Remove the blade by removing the center bolt, lock washer and flat washer.

WARNING: Use caution when removing the blade to avoid contacting the weld bolts on the housing.

9. When sharpening the blade, follow the original angle of grind as a guide. It is extremely important that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade.
10. An unbalanced blade will cause excessive vibration when rotating at high speeds and may cause damage to the unit. The blade can be tested for balance by balancing it on a round shaft screwdriver or nail. Remove metal from the heavy side until it is balanced evenly. See Figure 12.
11. When reassembling the blade, tighten center bolt to between 550 and 700 inch-pounds and the two outer bolts to between 250 and 350 inch-pounds, or lacking torque wrench, tighten securely. See Figure 11.

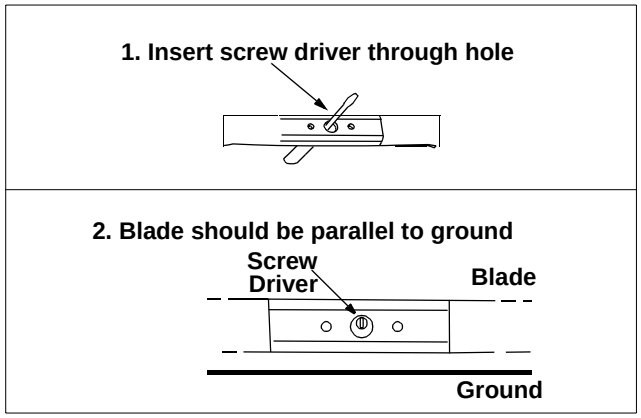


Figure 12

SECTION 8: OFF-SEASON STORAGE

Prepare your chipper-shredder for storage at the end of the season or if the unit will not be used for 30 days or more. The following steps should be taken to prepare your shredder for storage.

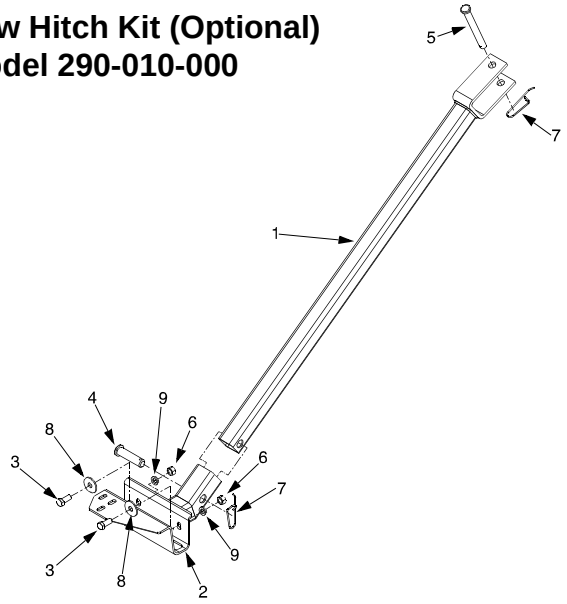
1. Clean and lubricate the shredder thoroughly.
2. Refer to engine manual for correct engine storage instructions.
3. If storing an unventilated or metal storage shed, coat metal parts with a light oil or silicone to prevent rust.
4. Store in a cool dry place. Do not store next to corrosive materials such as fertilizer.

SECTION 9: TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	Dirty air cleaner. Choke not in ON position. Spark plug wire disconnected. Cannot pull recoil cord. Fuel tank empty, or stale fuel. Fuel shut-off valve closed (if so equipped). Faulty spark plug.	Refer to the engine manual packed with your unit. Move switch to ON position. Connect wire to spark plug. Obstruction lodged in impeller. Stop immediately and disconnect spark plug wire. Remove lodged object. Fill tank with clean, fresh gasoline. Fuel will not last over thirty days unless a fuel stabilizer is used. Open fuel shut-off valve. Clean, adjust gap or replace.
Loss of power; operation erratic	Spark plug wire loose. Unit running on CHOKE. Blocked fuel line or stale fuel. Water or dirt in fuel system. Carburetor out of adjustment. Dirty air cleaner.	Connect and tighten spark plug wire. Move choke lever to OFF position. Clean fuel line; fill tank with clean, fresh gasoline. Fuel will not last over thirty days unless a fuel stabilizer is used. Disconnect fuel line at carburetor to drain fuel tank. Refill with fresh fuel. Refer to the engine manual packed with your unit. Refer to the engine manual packed with your unit.
Engine overheats	Carburetor not adjusted properly. Dirty air cleaner. Engine oil level low.	Refer to the engine manual packed with your unit. Refer to the engine manual packed with your unit. Fill crankcase with proper oil.
Too much vibration	Loose parts or damaged impeller.	Stop engine immediately and disconnect spark plug wire. Have unit serviced by an authorized service dealer.
Unit does not discharge	Discharge chute clogged. Low engine RPM. Foreign object lodged in impeller.	Stop engine immediately and disconnect spark plug wire. Clean flail screen and inside of housing. See Maintenance section of this manual. Always run engine at full throttle Stop engine immediately and disconnect spark plug wire. Remove lodged object.
Rate of discharge slows considerably or composition of discharged material changes	Low engine RPM. Shredding blade and/or chipper blades dull.	Always run engine at full throttle Replace shredding and chipper blades or see your authorized service dealer.

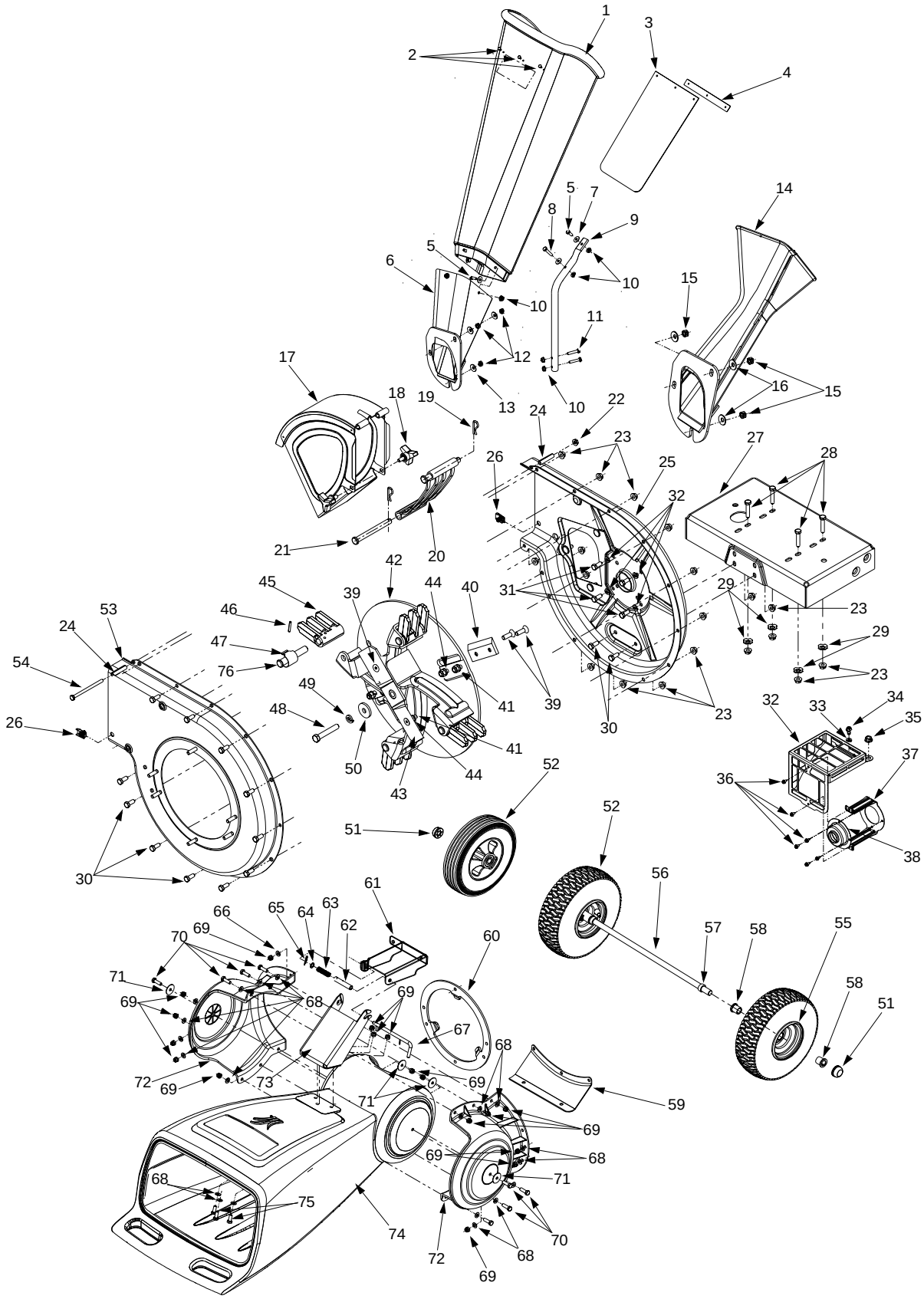
Note: For repairs beyond the minor adjustments above, contact your local authorized service dealer.

Tow Hitch Kit (Optional)
Model 290-010-000



REF. NO.	PART NO	DESCRIPTION
1	681-0133	Tow Bar Tongue
2	681-0134	Tow Bar Base
3	710-3001	Hex Cap Screw 3/8-16
4	711-0299	Clevis Pin
5	711-0835	Clevis Pin
6	712-0798	Hex Nut 3/8-16
7	732-0194	Spring Pin
8	736-0133	Flat Washer .411 x 1.25 x 1.00
9	736-0169	Lock Washer 3/8

Model Series 462 thru 465



Model Series 462 thru 465

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	731-1899	Chipper Chute	44	736-0119	Lock Washer 5/16
2	728-0175	Pop Rivet	45	719-0329	Flail Blade
3	735-0249	Chute Flap	46	715-0166	Spiral Pin
4	781-0633	Flat Strip	47	781-0735	Spring Pin
5	710-0751	Hex Cap Screw 1/4-20 x .620	48	710-1254	Hex Cap Screw 3/8-24 x 2.25
6	681-0068	Chipper Chute Am	49	736-0217	Lock Washer 3/8
7	736-0173	Flat Washer.28 ID x .74 OD	50	736-0247	Flat Washer 3/8 x 1.25
8	710-0106	Hex Cap Screw 1/4-20 x 1.25	51	726-0214	Push Cap
9	749-1004	Chute Support	52	734-1600	Wheel Assy Comp 10.0 x 2.5
10	712-3027	Hex Flange Nut 1/4-20		734-1597	Wheel Assy Comp 10.0 x 4 x 4
11	710-0106	Hex Cap Screw 1/4-20 x 1.25		734-1455A	Rim Assy Comp.
12	712-3010	Hex Nut 5/16-18		734-1598	Tire Only
13	736-0242	Bell Washer.340 ID x .872 OD		734-0255	Air Valve
14	681-0095	Complete Chipper Chute		737-0211A	Grease Fitting
15	712-3010	Hex Nut 5/16-18	53	681-0004A	Front Housing Asm
16	736-0242	Bell Washer .340 ID x .872 OD	54	710-0825	Hex Cap Screw 1/4-20 x 3.75
17	681-0094	Chute Asm	55	734-1455A	Rim
18	720-0170	Knob 5/16-18	56	738-0814	Shredder Axle 21.2” (462 or 463)
19	714-0149B	Cotter Pin		738-0813	Shredder Axle 22.5” (465)
20	781-0457	Shredder Screen	57	750-0786	Spacer
21	711-0835	Clevis Pin	58	741-0487A	Flange Bearing
22	712-3027	Hex Lock Nut 1/4-20	59	781-0515	Support Bracket
23	712-3004A	Flange Hex Lock Nut 5/16-18	60	781-0574	Shredder Plate
24	750-0793	Spacer	61	681-0104	Bracket Asm
25	681-0117	Rear Housing Asm	62	750-0785	Spacer
26	726-0211	U Nut 5/16-18	63	732-0306	Compression Spring
27	781-0510B	Shredder Frame	64	736-0117	Flat Washer 3/8 x .620 x .033
28	710-0805	Hex Cap Screw 5/16-18 x 1.5	65	714-0104	Cotter Pin
29	736-0170	Bell Washer 5/16 x 1.0	66	736-0264	Flat Washer
30	710-3008	Hex Cap Screw 5/16-18 x .75	67	711-1128	Release Rod
31	710-0157	Hex Cap Screw 5/16-24 x .75	68	736-0264	Flat Washer .330 ID x .630 OD
32	736-0119	Lock Washer 5/16	69	712-0429	Hex Lock Nut 5/16-18
33	736-0329	Lock Washer 1/4	70	710-0376	Hex Cap Screw 5/16-18 x 1.0
34	710-0599	Hex Washer Screw 1/4-20 x .5	71	736-0362	Flat Washer .320 ID x 1.25 OD
35	712-3004A	Hex Lock Nut 5/16-18	72	731-1710	Collar-Hopper
36	710-1502	Hex Washer Screw	73	681-0123	Hopper Bracket Asm
37	751-0646	Muffler Bracket Guard	74	731-1707	Hopper
38	751-0447	Deflector	75	710-3008	Hex Cap Screw 5/16-18 x .75
39	710-1054	Flat Screw 5/16-24 x 1.0	76	711-0833B	Clevis Pin
40	781-0490	Chipper Blade	77	737-0195	Oil Drain Elbow (Not Shown)
41	712-0411	Hex Lock Nut 5/16-24		723-0400	Safety Glasses (Not Shown)
42	681-0030	Impeller Asm		764-0199A	Bag (Not Shown)
43	742-0571	Shredder Blade			

MANUFACTURER'S LIMITED WARRANTY FOR:

YARD MACHINES by MTD®

The limited warranty set forth below is given by MTD PRODUCTS INC ("MTD") with respect to new merchandise purchased and used in the United States, its possessions and territories.

MTD warrants this product against defects in material and workmanship for a period of two (2) years commencing on the date of original purchase and will, at its option, repair or replace, free of charge, any part found to be defective in material or workmanship. This limited warranty shall only apply if this product has been operated and maintained in accordance with the Operator's Manual furnished with the product, and has not been subject to misuse, abuse, commercial use, neglect, accident, improper maintenance, alteration, vandalism, theft, fire, water or damage because of other peril or natural disaster. Damage resulting from the installation or use of any accessory or attachment not approved by MTD Products Inc. for use with the product(s) covered by this manual will void your warranty as to any resulting damages.

Normal wear parts or components thereof are subject to separate terms as follows: All normal wear part or component failures will be covered on the product for a period of 90 days regardless of cause. After 90 days, but within the two year period, normal wear part failures will be covered ONLY IF caused by defects in material or workmanship of OTHER component parts. Normal wear parts and components include, but are not limited to, belts, blades, blade adapters, grass bags, rider deck wheels, seats, snow thrower skid shoes, shave plates and tires. Batteries are covered by a 90-day limited replacement warranty.

HOW TO OBTAIN SERVICE: Warranty service is available, WITH PROOF OF PURCHASE THROUGH YOUR LOCAL AUTHORIZED SERVICE DEALER. To locate the dealer in your area, please check for a listing in the Yellow Pages or contact the Customer Service Department of MTD PRODUCTS INC by calling 1-800-800-7310 or writing to P.O. Box 368022, Cleveland, Ohio 44136-9722. No product returned directly to the factory will be accepted unless prior written permission has been extended by the Customer Service Department of MTD PRODUCTS INC.

This limited warranty does not provide coverage in the following cases:

a. The engine or component parts thereof. These items carry a separate manufacturer's warranty. Please refer to the applicable manufacturer's warranty on these items.
b. Routine maintenance items such as lubricants, filters, blade sharpening and tune-ups, or adjustments such as brake adjustments, clutch adjustments or deck adjustments; and normal deterioration of the exterior finish due to use or exposure.
c. Log splitter pumps, valves and cylinders have a separate one year warranty.
d. MTD does not extend any warranty for products sold or exported outside of the United States of America, its possessions and territories, except those sold through MTD's authorized channels of export distribution.

No implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, applies after the applicable period of express written warranty above as to the parts as identified. No other express warranty or guaranty, whether written or oral, except as mentioned above, given by any person or entity, including a dealer or retailer, with respect to any product shall bind MTD. During the period of the Warranty, the exclusive remedy is repair or replacement of the product as set forth above. (Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.)

The provisions as set forth in this Warranty provide the sole and exclusive remedy arising from the sales. MTD shall not be liable for incidental or consequential loss or damages including, without limitation, expenses incurred for substitute or replacement lawn care services, for transportation or for related expenses, or for rental expenses to temporarily replace a warranted product. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.)

In no event shall recovery of any kind be greater than the amount of the purchase price of the product sold. Alteration of the safety features of the product shall void this Warranty. You assume the risk and liability for loss, damage, or injury to you and your property and/or to others and their property arising out of the use or misuse or inability to use the product.

This limited warranty shall not extend to anyone other than the original purchaser, original lessee or the person for whom it was purchased as a gift.

How State Law Relates to this Warranty: This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.